REMARKS

35 U.S.C. § 102 Rejection

The Office Action rejects claims 1-28 under U.S.C. 102(e) as being anticipated by USP 7024006 (Schwartz).

Applicant has amended claim 1 to further distinguish over the Schwartz reference. Claim 1, as amended, recites a parametric equalizer comprising an audio filter having a plurality of electronic components for filtering a first audio signal. The parametric equalizer includes a first control mechanism having a variable resistive element coupled to a first node within the plurality of electronic components for controlling a center frequency of the audio filter for modifying a center frequency of the first audio signal. The parametric equalizer includes a second control mechanism having first and second commonly controlled variable resistive elements respectively coupled to second and third nodes within the plurality of electronic components. The first and second resistive elements jointly control a signal level and a bandwidth of the audio filter for simultaneously modifying a signal level and a bandwidth of the first audio signal. The second control mechanism includes a mechanical input. The mechanical input consists of one rotary control knob or one linear slide control coupled to the first and second commonly controlled variable resistive elements.

The Schwartz reference discloses a complementary-pair equalizer. In the reference, a primary input signal and a secondary input signal are fed into the equalizer. See FIGs. 2A and 2B, for example. The equalizer allows for unwanted sounds or characteristics of one signal to be removed, while the other

sound signal is modified to compensate for the modifications to the first sound signal. For example, "as a particular frequency region [of the first signal] is reduced by primary circuit 12, it is also increased [in the second signal] by secondary circuit 22 by the same magnitude." Column 3, lines 32-24. Similarly, the "boost gain [of the first signal] should complement the cut gain [of the second signal] in a proportion that maintains the overall gain relationship on the outputs of 12 and 22 when combined." Column 3, lines 40-42. By providing single equalizer inputs that each modify a single characteristic of at least two separate input signals, the system allows for an unwanted characteristic of one signal to be minimized, while the same characteristic of the other signal is emphasized to compensate. With reference to the Abstract, the "first and alternate signals are provided to respective signal processors. A level for a selected frequency band of the first and alternate signals is adjusted so that an increase in one results in a decrease in the other. Doing so allows the frequency band that includes the unwanted signal to be reduced in the desired first signal and filled in with a similar frequency band from the alternate signal."

In one example application of the Schwartz reference, the equalizer is connected to two microphones placed in different corners of a room to record an orchestra. If the first microphone picks up unwanted high-frequency sound generated by a steam radiator, for example, a single input to the equalizer can be adjusted to cut the frequency range of the first microphone, thereby eliminating the unwanted high-frequency sound from the first microphone. At the same time, and via the same input, the frequency range of the second microphone is adjusted to

compensate for the lost signal from the first microphone. Throughout the Schwartz reference, each of the inputs to the equalizer system modifies the same sound characteristic of at least two input signals. In most cases, where the characteristic is minimized in one signal, the Schwartz equalizer boosts that same characteristic in the other signal. The Schwartz reference never discloses a single input for modifying more than one sound characteristic of an input signal.

The Schwartz reference does not teach or suggest a second control mechanism having first and second commonly controlled variable resistive elements respectively coupled to second and third nodes within the plurality of electronic components. The first and second resistive elements jointly control a signal level and a bandwidth of the audio filter for simultaneously modifying a signal level and a bandwidth of the first audio signal. The second control mechanism includes a mechanical input. The mechanical input consists of one rotary control knob or one linear slide control coupled to the first and second commonly controlled variable resistive elements.

In the present claim, the second control mechanism is configured to simultaneously modify both the signal level and the bandwidth of a single input signal. The Schwartz reference never describes a single input mechanism that modifies both a signal level and a bandwidth of a single input signal. Throughout the reference, each of the inputs is only configured to modify a single attribute of a plurality of input signals. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first

and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single input control more than one attribute of one of the input signals. Accordingly, because each of the input controls of the Schwartz reference modifies a plurality of input signals and only modifies a single attribute of each of those signals, the Schwartz reference does not disclose the second control mechanism of the present claim.

Therefore, claim 1, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 2-6 are believed to be in condition for allowance as each is dependent from an allowable base claim.

Applicant has amended claim 7 to further distinguish over the Schwartz reference. Claim 7, as amended, recites an audio system comprising a parametric equalizer having attributes determined by a plurality of control parameters. The parametric equalizer includes an audio filter having a plurality of electronic components. The audio system includes a first control interface coupled for jointly controlling first and second control parameters of the parametric equalizer. The first control interface includes a mechanical input. The mechanical input consists of one rotary control knob or one linear slide control coupled to the audio filter. The first control parameter is signal level of the audio filter and the second control parameter is bandwidth of the audio filter.

The Schwartz reference does not teach or suggest a first control interface coupled for jointly controlling first and second control parameters of the parametric equalizer. The first control interface includes a mechanical input. The mechanical input consists of one rotary control knob or one

linear slide control coupled to the audio filter. The first control parameter is signal level of the audio filter and the second control parameter is bandwidth of the audio filter.

In the present claim, the first control interface is configured to jointly control the signal level and the bandwidth of the audio filter. The Schwartz reference never describes a single mechanical input mechanism that modifies both a signal level and a bandwidth of an input signal. Throughout the reference, each of the inputs is only configured to modify a single attribute of the input signals. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single input control more than one attribute of one of the input signals. Accordingly, because each of the input controls of the Schwartz reference only modifies a single attribute of each of the input signals, the Schwartz reference does not disclose the first control interface of the present claim.

Therefore, claim 7, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 9-13 and 15-21 are believed to be in condition for allowance as each is dependent from an allowable base claim.

Applicant has amended claim 22 to further distinguish over the Schwartz reference. Claim 22, as amended, recites a signal processing circuit comprising a filter, a first variable resistor coupled to a first node within the filter for controlling a first parametric function of the filter, and a

second variable resistor coupled to a second node within the filter for controlling a second parametric function of the filter. The first and second variable resistors are jointly controlled by a single input to the signal processing circuit. The first parametric function is signal level and the second parametric function is bandwidth.

The Schwartz reference does not teach or suggest a filter including a first variable resistor coupled to a first node within the filter for controlling a first parametric function of the filter, and a second variable resistor coupled to a second node within the filter for controlling a second parametric function of the filter. The first and second variable resistors are jointly controlled by a single input to the signal processing circuit. The first parametric function is signal level and the second parametric function is bandwidth.

In the present claim, a single input jointly controls the signal level and the bandwidth of the filter. The Schwartz reference never describes a single input mechanism that jointly modifies both a signal level and a bandwidth of a filter. Throughout the reference, each of the inputs is only configured to modify a single attribute of the equalizer. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single input control more than one attribute of one of the input signals. Accordingly, because each of the input controls of the Schwartz reference only modifies a single attribute of the

equalizer, the Schwartz reference does not disclose the signal processing circuit of the present claim.

Therefore, claim 22, as amended, is believed to patentably distinguish over the Schwartz reference. Claim 23 is believed to be in condition for allowance as it is dependent from an allowable base claim.

Applicant has amended claim 25 to further distinguish over the Schwartz reference. Claim 25, as amended, recites a method of controlling a parametric equalizer comprising providing a mechanical input for generating an input value, providing a control interface coupled to the mechanical input and having first and second variable elements which are jointly controlled, and controlling first and second control parameters of the parametric equalizer with the first and second variable elements in accordance with the input value of the mechanical input.

The Schwartz reference does not teach or suggest a control interface coupled to the mechanical input and having first and second variable elements which are jointly controlled, and controlling first and second control parameters of the parametric equalizer with the first and second variable elements in accordance with the input value of the mechanical input.

In the present claim, the mechanical input generates an input value that jointly controls first and second control parameters of the parametric equalizer. The Schwartz reference never describes a single input mechanism that modifies at least two parameters of an audio filter for modifying an input audio signal. Throughout the reference, each of the inputs is only configured to modify a single attribute of an audio filter and, consequently, the input signals. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate

inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single input control more than one attribute of one of the input signals. Accordingly, because each of the input controls of the Schwartz reference modifies a plurality of input signals and only modifies a single attribute of each of those signals, the Schwartz reference does not disclose the method of the present claim.

Therefore, claim 25, as amended, is believed to patentably distinguish over the Schwartz reference. Claims 26-28 are believed to be in condition for allowance as each is dependent from an allowable base claim.

New Claims

Applicant has added new claim 29. Claim 29 recites an audio system comprising an input port for receiving an input consisting of a single audio signal, and a bandwidth filter circuit coupled to the input port for receiving and filtering the audio signal. The bandwidth filter circuit is tunable in response to an input value. The audio system includes a signal level filter circuit coupled to the input port for receiving and filtering the audio signal. The signal level filter circuit is tunable in response to an input value. The audio system includes a control interface for generating an input value and that is configured to communicate the input value to the bandwidth filter circuit and the signal level filter circuit. The bandwidth filter circuit and the signal level filter circuit modify a bandwidth and a signal level of the audio signal in

accordance with the input value.

None of the references teach or suggest a control interface for generating an input value and that is configured to communicate the input value to a bandwidth filter circuit and a signal level filter circuit. Throughout the Schwartz reference, none of the inputs communicate with both a bandwidth and a signal level filter circuit. For example, with reference to FIG. 2A of the reference, the equalizer includes three separate inputs. The first input controls the central frequency of the first and second input signals. The second input controls the bandwidth of the first and second input signals. The third input controls the gain of the first and second input levels. At no time in the reference does any single input communicate an input value to modify both a bandwidth and a signal level of an audio signal.

None of the references teach or suggest wherein the bandwidth filter circuit and the signal level filter circuit modify the audio signal in accordance with the input value to modify a bandwidth and a signal level of the audio signal. The Schwartz reference never discloses a single input for modifying more than one attribute of a single input signal. Instead, in each embodiment, the inputs modify the same attribute of two or more input signals. Accordingly, the reference fails to disclose a bandwidth and a signal level filter that are controlled by a single input and modify an input audio signal.

Therefore, claim 29 is believed to patentably distinguish over the Schwartz reference. Claims 30-34 are believed to be in condition for allowance as each is dependent from an allowable base claim.

Conclusion

Applicant believes that all information and requirements for the application have been provided to the USPTO. If there are matters that can be discussed by telephone to further the prosecution of the Application, Applicant invites the Examiner to call the undersigned attorney at the Examiner's convenience.

The Commissioner is hereby authorized to charge any fees due with this Response to U.S. PTO Account No. 17-0055.

Respectfully submitted,
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